Removal of bentonite causing turbidity by electro-coagulation

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Abstract: The efficiency of electro-coagulation as a turbidity removal process has been investigated using bentonite as a turbidity source. The influence of certain operational parameters such as current input, contact time, electrolyte concentration, and initial turbidity on the coagulation efficiency were studied. The process was found to achieve excellent turbidity removals. The lowest residual turbidities were 0.5 and 0.75 NTU for the samples with initial turbidities of 112 and 52 NTU, respectively. This was obtained at a current of 0.5 A, a contact time of 5 minutes, and a calculated dissolved iron concentration of 10.8 mg/l. At a constant current of 0.5 A, a reduction in the contact time from 5 to 2 minutes in the case of turbidity level 1 (52 NTU) and from 5 to 1 minute in the case of turbidity level 2 (112 NTU) resulted in better turbidity removals. The optimal operational parameters for turbidity level 1 are a current of 0.5 A, a contact time of 2 minutes and an NaCl concentration of 2 g/l resulting in a calculated amount of iron generated of 4.3 mg/l. However, for the case of turbidity level 2, the optimal values are a current of 0.5 A, a contact time of 1 minute and an NaCl concentration of 5 g/l with a calculated iron amount generated of 2.2 mg/l.